

Name: _____

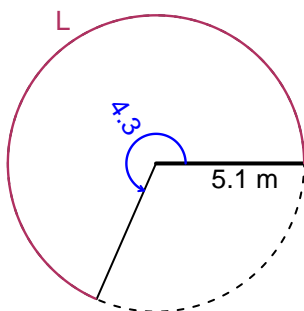
Date: _____

Trig Final (TEST v654)

- You should have a calculator (like [Desmos](#)) and a [unit-circle](#) reference sheet.

Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The radius is 5.1 meters. The angle measure is 4.3 radians. How long is the arc in meters?

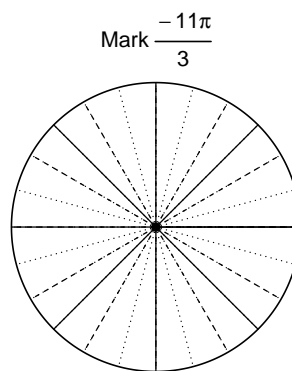


Question 2

Consider angles $\frac{13\pi}{4}$ and $\frac{-11\pi}{3}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\cos\left(\frac{13\pi}{4}\right)$ and $\sin\left(\frac{-11\pi}{3}\right)$ by using a unit circle (provided separately).



Find $\cos(13\pi/4)$



Find $\sin(-11\pi/3)$

Question 3

If $\sin(\theta) = \frac{-63}{65}$, and θ is in quadrant III, determine an exact value for $\cos(\theta)$.

Question 4

A mass-spring system oscillates vertically with a midline at $y = 2.41$ meters, a frequency of 3.44 Hz, and an amplitude of 7.7 meters. At $t = 0$, the mass is at the midline and moving up. Write an equation to model the height (y in meters) as a function of time (t in seconds).